

1.0 INTRODUCTION

Federal regulations, administered by the Arizona Department of Environmental Quality (ADEQ), require facilities such as the Big Sandy Energy Project to develop a Storm Water Pollution Prevention Plan (SWPPP). The main purpose of these SWPPPs is to protect local water quality by reducing the amount of pollutants in storm water discharges from commercial and industrial sites.

The following information provides the SWPPP for the Big Sandy Energy Project.

1.1 Purpose

To reduce and minimize pollution discharges to the storm water discharge system, Caithness has developed an SWPPP for the facility. The SWPPP has two main purposes. These purposes are given as follows:

- To identify and evaluate sources of pollutants associated with industrial activities that may affect the quality of storm water discharges and authorized non-storm water discharges from the Project.
- To identify and implement site-specific Best Management Practices (BMPs) to reduce or prevent pollutants associated with plant activities in storm water discharges and authorized non-storm water discharges.

1.2 Management Controls

The Project Environmental/Safety Engineer is responsible for developing, implementing, and revising the SWPPP for the entire facility. A Storm Water Committee consisting of the Plant's Manager, the Operations Manager, and the Environmental/Safety Engineer is responsible for discussing, approving, and implementing storm water management control measures detailed in this plan.

1.3 Implementation

Implementation of all BMPs for the Project are being achieved during design of the facility. These design features will be implemented during the construction phase of the Project. During start-up and operation of the plant, the Environmental/Safety Engineer will examine the constructed storm water BMPs to assure that they are effective in preventing pollutants from entering the storm water system. Any alterations to the drainage system and/or storm water runoff control system will be implemented by the plant management if the designed BMPs are inadequate. This will be done on a case-by-case situation and reported in an annual update to the ADEQ.

1.4 Public Access to Big Sandy Energy Project Storm Water Pollution Prevention Plan

The SWPPP is a facility plan for use by Big Sandy Energy Project personnel. It is also a public document. Representatives of the ADEQ are allowed direct access to the plant during site visits. Additionally, a copy of the SWPPP is supplied to the ADEQ as a requirement of the plan approval. Any other request for a copy of this plan can be obtained through the Big Sandy Energy Project's Environmental/Safety Engineer.

1.5 Revisions to the Storm Water Pollution Prevention Plan

The Project is required to revise and implement the SWPPP to correct any deficiencies that are found that may significantly affect the quality of the storm water discharges and authorized non-storm water discharges. Additionally, the Big Sandy Energy Project management is responsible for reviewing and revising the SWPPP on a yearly basis to reflect the results from the annual site inspection and storm water discharge analytical data of the facility. All revisions and updates to the SWPPP are supplied to the ADEQ. The Project's Environmental/Safety Engineer is responsible for determining when the SWPPP needs to be revised, and when completed. The Storm Water Committee will review and implement any annual recommendations made by the Environmental/Safety Engineer to the SWPPP.

2.0 SITE DESCRIPTION

The Big Sandy Energy Project is a nominally rated 720-megawatt (MW) combined-cycle power plant located approximately five miles southeast of Wikieup, Arizona. The Wikieup area is in the southeastern portion of Mohave County (**Figure 1**).

The Plant will be located on land privately owned by Caithness. The Plant will be constructed in two phases. Phase 1 will be a 500 MW natural gas-fired combined-cycle power plant comprising two advanced technology combustion turbines, one steam turbine, and supporting equipment. Phase 2 of the Project will consist of a third combustion turbine and steam turbine with one generator in a single shaft combined cycle arrangement resulting in 220MW of additional capacity for a total plant capacity of 720 MW. Phase 2 is expected to be completed within 18 months of Phase 1 commercial operation.

Fuel for the plant will be natural gas, delivered to the site via a new pipeline that will interconnect with either or all of three existing gas transmission lines. The plant facilities will cover approximately 76 acres, about 30 acres of which will be occupied by the new generation plant and switchyard. Approximately 18 acres of the site will be used for evaporation ponds. A map of the site configuration is shown in **Figure 2**.

2.1 General Location and Description

General information concerning the plant is provided as follows:

Name of Installation: **Big Sandy Energy Project**
Type of Installation: **Electrical Generation and Distribution Facility**
Sic Code: **5063**
Physical Location of Installation: **Southeast of Wikieup, Arizona**
Telephone Number: **XXX**
Fax Number: **XXX**
Latitude: **34° 40' 28"**
Longitude: **113° 32' 28"**
Name of Owner and Operator: **Caithness Big Sandy Energy, LLC**
Mailing Address of Installation: **XXX**

2.2 General Environment

2.2.1 Topography

The Big Sandy Energy Project is located in the Big Sandy Valley. The Big Sandy Valley is characterized by a mostly undeveloped, desert landscape with sparse vegetation composed mostly of desert scrub. Portions of the valley, however, are irrigated for agricultural crops. A topographic map of the area is provided as **Figure 3**.

2.2.2 Climate

The climate of the Big Sandy Valley is typical of a desert region with minimal precipitation, evaporation greatly exceeding precipitation, hot temperatures with a wide daily temperature range, and low relative humidity.

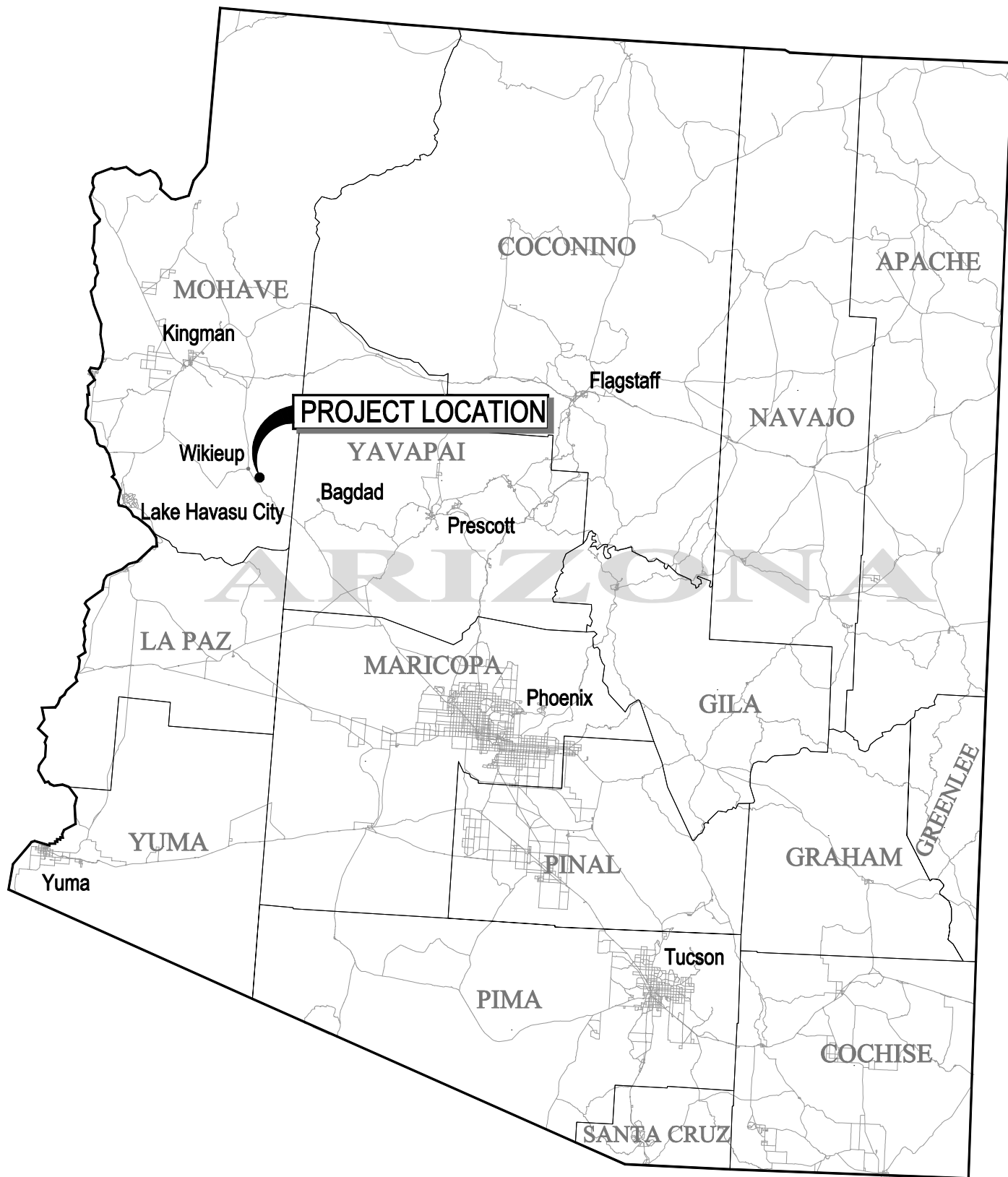
The Big Sandy River Valley lies between the Hualapai Mountains to the west and the Aquarius Mountains to the east. Both of these ranges trend northwest to southeast. The base elevation of the Big Sandy Energy Project will be 2,070 feet. At the project site, the Big Sandy Valley similarly is approximately 7 miles bounded by elevations 2,960 feet to the west and 4,300 feet to the east. The terrain slopes downward from north to south throughout the Big Sandy River Valley.

Wikieup is a cooperative weather reporting location (Station 092309) for the National Weather Service. According to climate records obtained from the Western Regional Climate Center, the average annual temperature at Wikieup is 66.0 °F. The average maximum temperature ranges from 105 °F in July to 64 °F in January. The average minimum temperature ranges from 33 °F in January to 68 °F in July. Precipitation is sparse. The average annual precipitation is only 10 inches. Approximately 47 percent of annual precipitation occurs from December through March. The summer monsoonal flow brings another 32 percent of annual precipitation from July through September. Net pan evaporation at the site is approximately 130 inches per year.

Wind patterns in the area of the project site are presented from data collected at the Wikieup meteorological station, located near the southeast edge of Wikieup. Annual, January to March, April to June, July to September, and October to December wind roses are provided in **Appendix A**.

2.2.3 Runoff Volume and Patterns

As indicated in the previous section, the precipitation in the Wikieup area is concentrated typically in two periods, one in the summer and one in the winter. In



APPLICATION FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATABILITY

BIG SANDY ENERGY PROJECT

FIGURE 1
PROJECT LOCATION MAP

ANALYSIS AREA KINGMAN TO WIKIEUP, MOHAVE COUNTY, ARIZONA

DATE: 10/11/00

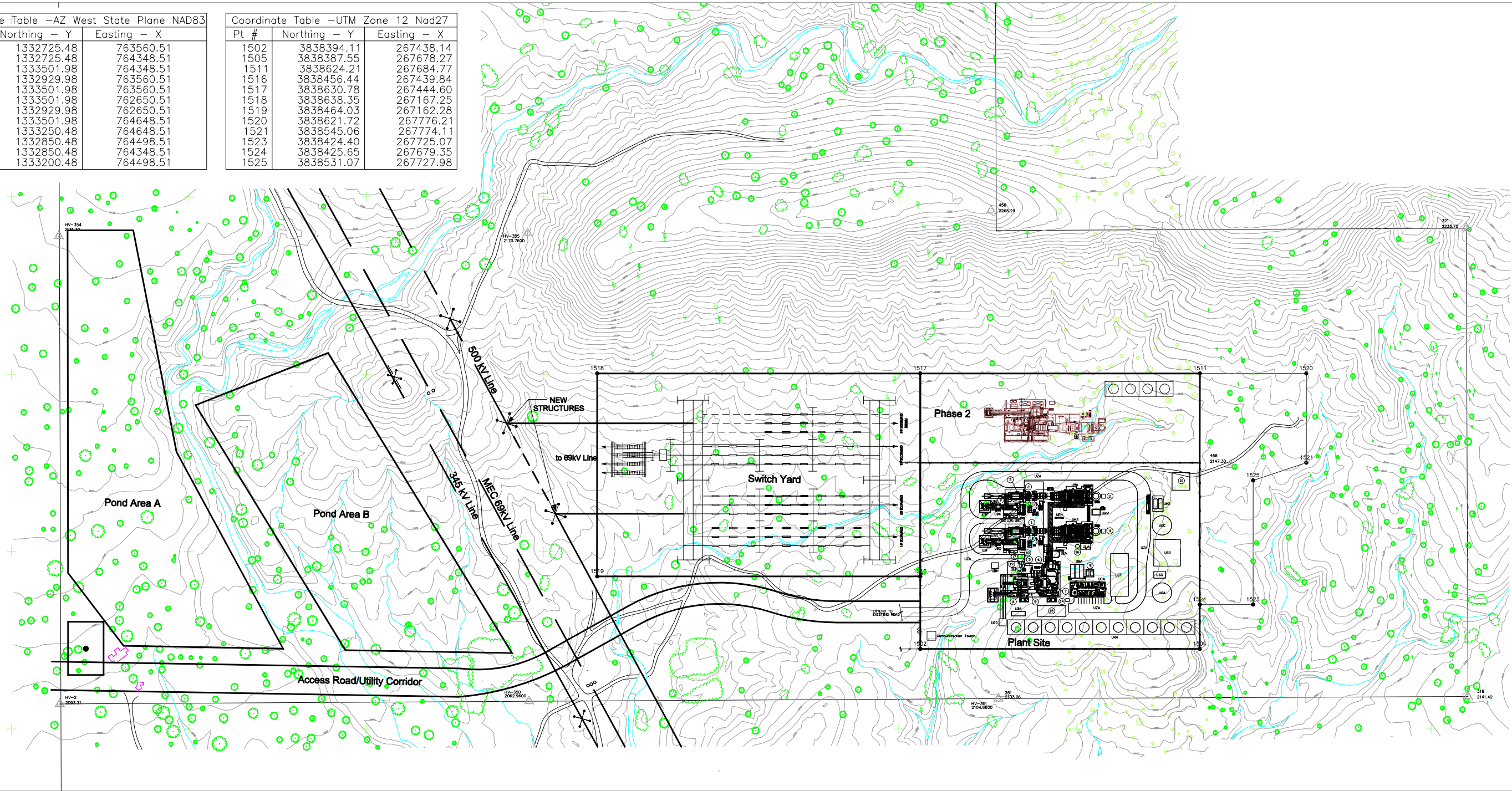
AutoCAD File: 891-LOC.DWG

SCALE: AS NOTED

DRAWN BY: EC

Coordinate Table -AZ West State Plane NAD83		
Pt #	Northing - Y	Easting - X
1502	1332725.48	763560.51
1505	1332725.48	764348.51
1511	1333501.98	764348.51
1516	1332929.98	763560.51
1517	1333501.98	763560.51
1518	1333501.98	762650.51
1519	1332929.98	762650.51
1520	1333501.98	764648.51
1521	1333250.48	764648.51
1523	1332850.48	764498.51
1524	1332850.48	764348.51
1525	1333200.48	764498.51

Coordinate Table -UTM Zone 12 Nad27		
Pt #	Northing - Y	Easting - X
1502	3838394.11	267438.14
1505	3838387.55	267678.27
1511	3838624.21	267684.77
1516	3838456.44	267439.84
1517	3838630.78	267444.60
1518	3838638.35	267167.25
1519	3838464.03	267162.28
1520	3838621.72	267776.21
1521	3838545.06	267774.11
1523	3838424.40	267725.07
1524	3838425.65	267679.35
1525	3838531.07	267727.98

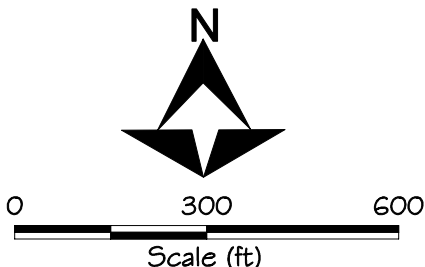


LEGEND

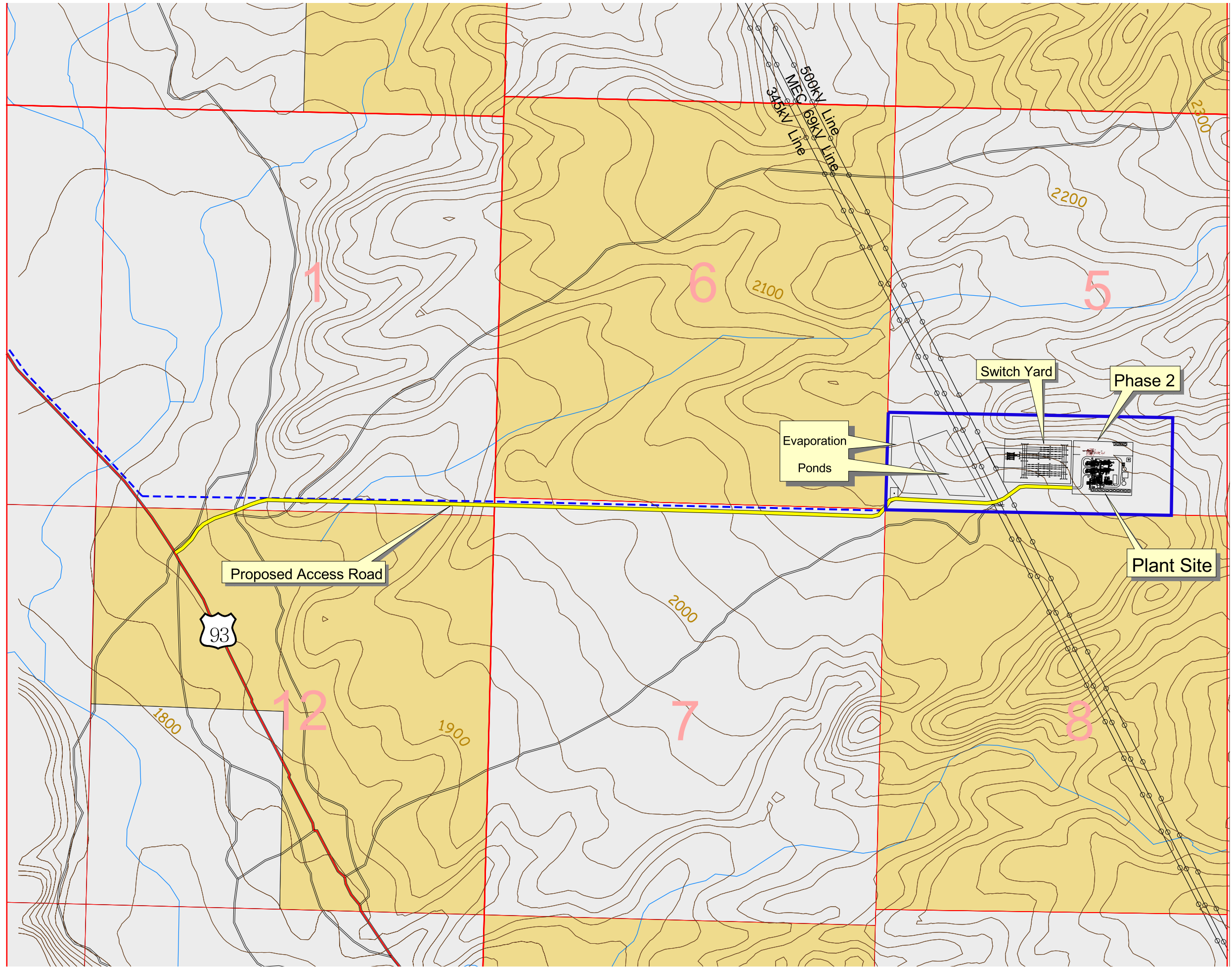
- | | | | |
|----|-----------------------------|-----|--------------------------------------|
| 1 | GAS TURBINE | UBA | POWER CONTROL CENTER |
| 2 | AIR INTAKE DUCT | UBD | LV-AUXILIARY POWER TRANSFORMER |
| 3 | GENERATOR (TEWAC) | UBE | MV-AUXILIARY POWER TRANSFORMER |
| 4 | STEAM TURBINE | UBF | GENERATOR TRANSFORMER |
| 5 | CONDENSER | UBG | START UP TRANSFORMERS |
| 6 | MAIN CONDENSATE PUMPS | UBH | OIL/WATER SEPARATOR |
| 7 | LUBE OIL TANK ROOM | UBX | CIRCUIT BREAKER |
| 8 | GENERATOR BUS DUCT | UCA | CONTROL ROOM BUILDING |
| 9 | HVAC UNIT FOR UCA | UEN | GAS PREHEATER |
| 10 | FUEL GAS CONDITIONING AREA | UGA | RAW WATER SUPPLY TANK |
| 11 | CEMS ENCLOSURE | UGC | DEMINERALIZED WATER STORAGE TANK |
| 12 | PLANT AIR COMPRESSORS | UHA | HEAT RECOVERY STEAM GENERATOR |
| 13 | NOT USED | UHW | BOILER BLOWDOWN |
| 14 | SEPTIC TANK | UHX | AMMONIA STORAGE AREA |
| 15 | DRAIN FIELD | ULA | FEEDWATER PUMPHOUSE |
| 16 | S/U DEAERATOR | UMY | PIPE BRIDGE |
| 17 | EXPANSION TANK | URA | COOLING TOWER |
| 18 | CLOSED COOLING WATER PUMPS | URD | CIRCULATING WATER PUMPS |
| 19 | COOLING WATER BOOSTER PUMPS | USG | FIRE PUMP HOUSE |
| 20 | PLATE FRAME HEAT EXCHANGER | USR | WASTE TREATMENT BUILDING (BY OTHERS) |
| | | UST | WORKSHOP |
| | | UZA | ROADS |

NOTES

1. THE EQUIPMENT SHOWN IS REPRESENTATIVE INFORMATION. THIS DESIGN IS SUBJECT TO CHANGE AT THE DISCRETION OF SIEMENS WESTINGHOUSE.
2. REFERENCE DRAWING G7530102 FOR COMBUSTION TURBINE EQUIPMENT DIMENSIONS AND IDENTIFICATION.



BIG SANDY ENERGY PROJECT
FIGURE 2
Site Configuration

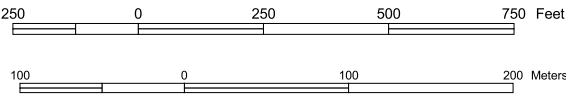


LEGEND

- Proposed Well Locations
- Proposed Access Road
- Proposed Gas Pipeline
- Proposed Water Pipeline
- Primary Trunk Highway
- Light Duty Road
- Existing Transmission Line
- River/Stream
- Land Status
 - Private Lands
 - BLM - Administerd Public Lands



Scale 1 : 4,600



Contour Interval 20 Feet

Transverse Mercator Projection
1927 North American Datum
Zone 12

BIG SANDY ENERGY PROJECT

FIGURE 3 TOPOGRAPHIC MAP OF BIG SANDY PROJECT AREA

ANALYSIS AREA: MOHAVE CO., CALIFORNIA	
DATE: 12/28/00	ArcView File: F:\BIGSANDY-891\SITE-DIAGRAM.APR
DRAWN BY: MSH	

the summer, high temperatures and moisture from the Gulf of Mexico can result in local thunderstorms. These thunderstorms have high intensities, and can result in heavy local rainfall and rapid runoff. Winter storms are generally the result of storms from the Pacific Ocean and cause gentle rains with little or no runoff. Occasionally, in August or September, moist air from tropical disturbances in the desert combines with Gulf of Mexico moisture and produces heavy rainfall throughout the area.

The power plant site is relatively flat with a slight slope. The general slope of the site is from northeast to the southwest. Some grading will occur at the site. The grading, however, will not significantly alter the current slope or drainage pattern.

Storm water runoff from plant areas will be directed to the evaporation ponds. Storm water runoff at other locations of the Project will be contained in either bermed areas or to local drainage channels.

2.2.4 Geology

Soil types in the Big Sandy Valley within the general area of the facility (**Figure 4**) include the following:

- Cellar-Rock outcrop complex unit is about 50 percent Cellar soil and 25 percent Rock outcrop, somewhat excessively drained, and formed on slopes of 20 to 60 percent. The Cellar parent material is composed of mixed igneous and metamorphic alluvium and colluvium. The soil unit is shallow and very shallow with a moderately rapid permeability. The available water capacity is very low and the shrink-swell potential is low. The potential of water erosion is very severe while the wind erosion potential is very slight. Revegetation in this soil is very difficult due to rock outcrop, low precipitation and water erosion hazard.
- Vekol gravelly loamy sand is a deep, well-drained soil formed on slopes of 2 to 7 percent. The soil is composed of mixed alluvium found at the proximal end of fan terraces. Permeability is slow while runoff is medium. Shrink-swell potential and available water capacity are high. The potential of water erosion is moderate while the hazard of wind erosion is moderately high. Revegetation in this soil is difficult due to low precipitation and wind and water erosion hazard.
- Cave gravelly sandy loam is composed of mixed alluvium found in fan terraces and formed on slopes of 10 to 35 percent. The soil is very shallow and shallow, well-drained with a moderately rapid permeability and a very rapid run-off. The shrink-swell potential is low while the available water capacity is very low. The hazard of water erosion is severe while the hazard

of wind erosion is slight. Revegetation is difficult due to steep slopes, water erosion hazard and low precipitation.

The Project site lies within seismic risk zone 2 (Algermissen 1969). Seismic risk zones are based on the number and intensity of earthquakes over a 100-year period, and are rated on a scale of 0 to 3, with 3 being the highest risk. Moderate damage from an earthquake corresponding to an intensity of 7 on the Modified Mercalli Intensity Scale (intensities are rated on a scale from 1 to 12) is the maximum impact that can be expected within the Project area. A search of the National Earthquake Information Center (USGS NEIC 1999) database was conducted to identify seismic events that have occurred within a 100 km (62 mile) radius of the geographic center of the Project area. From January 1973 through September 1999, two significant earthquakes occurred within the area analyzed. The largest event had a magnitude of 4.6.

Slope failures such as rockfall and slumps can potentially occur on the steep slopes at the northern margin of the site. Flash floods can occur in the washes which drain the site. Other portions of the site will not be susceptible to flooding or slope failure.

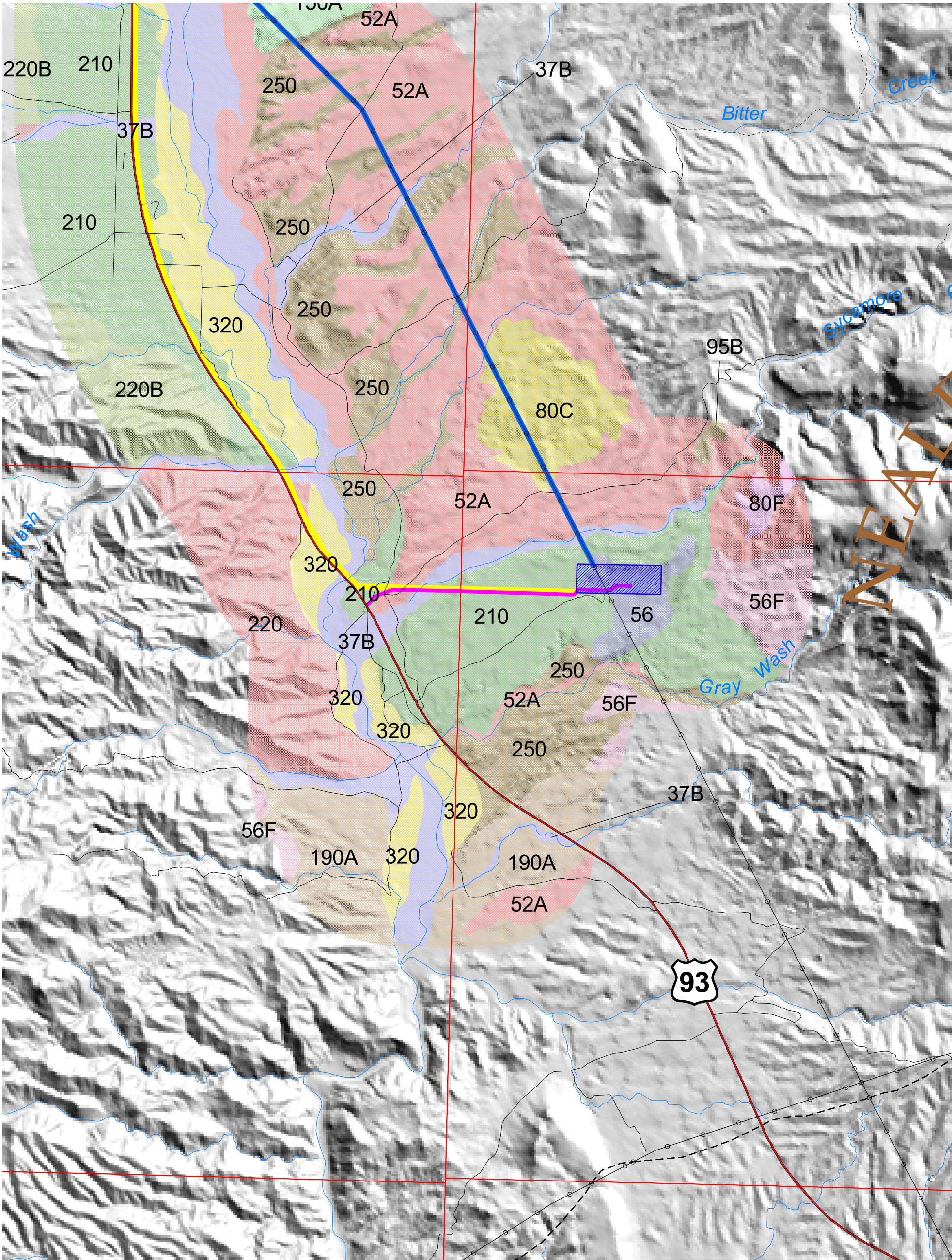
The power plant site is located two miles east of the Big Sandy river bed at elevations ranging from 2060 to 2250 feet. The surface of the site slopes southerly at a 4 to 40 percent gradient. The site is crossed by several ephemeral drainages which are tributaries of Gray Wash, a westerly flowing tributary of the Big Sandy River.

2.2.5 Hydrogeology

The Big Sandy Valley is a graben extending from approximately ten miles south of Wikieup northward to Interstate I-40. The basin in this area is roughly five miles wide at the southern end and widens to ten miles north of Wikieup. The graben extends both south and north beyond these limits, however, the graben becomes shallower and less pronounced to the south and narrower, passing into the Hualapai basin to the north.

The Project site is located in the southeastern portion of the Big Sandy Basin in Township 15N, Range 12W, Section 5. During the tertiary period, the basin was filled with sediments. The lithologic units in the basin are, from youngest to oldest, stream and floodplain alluvium, upper basin fill, lower basin fill, basaltic flows, volcanic rocks of Sycamore Creek, arkosic gravel, arkosic conglomerate, and granitic gneiss.

No surface water bodies or surface flow exist in the vicinity of the plant site, with the exception of ephemeral drainages during extreme storm events that may be evident as surface flow in shallow swales east of the property.



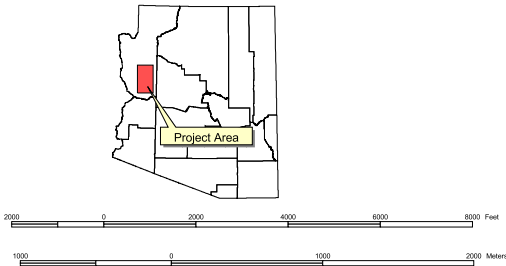
LEGEND

- Primary Trunk Highway
- Secondary Trunk Highway
- Light Duty Road
- Existing Natural Gas Pipelines
- Existing Transmission Lines
- River/Stream
- Proposed Power Plant Site
- Proposed Natural Gas Pipeline Route
- Access Road Corridor

SOIL TYPES

- 150A Continental-Dona Ana complex, dry, 2 to 15 percent slopes
- 190A Stagecoach very gravelly sandy loam, dry, 5 to 35 percent slopes
- 210 Vekol gravelly loamy sand, dry, 2 to 7 percent slopes
- 220 Stagecoach-Topawa-Eba complex, dry, 10 to 50 percent slopes
- 220B Stagecoach-Topawa-Eba complex, 10 to 50 percent slopes
- 250 Torriorthents, dry, 35 to 65 percent slopes
- 320 Gila-Glendale complex, dry, 1 to 3 percent slopes
- 37B Kokan-Vinton-Riverwash complex, dry, 1 to 3 percent slopes
- 52A Cacique extremely gravelly loam, 1 to 7 percent slopes
- 56 Cellar-Rock outcrop complex, dry, 20 to 60 percent slopes
- 56F Cellar-Rock outcrop complex, 20 to 60 percent slopes
- 80C Cline very stony loam, dry, 2 to 15 percent slopes
- 80F Cline very stony loam, dry, 40 to 70 percent slopes
- 95B Alela-Rock outcrop-Rubble land complex, dry, 40-70 percent slopes

Soil coverage compiled from data provided by the BLM Kingman, Arizona.



Transverse Mercator Projection
1927 North American Datum
Zone 12



SCALE 1 : 50,000

BIG SANDY ENERGY PROJECT

**FIGURE 4
SOIL TYPES
PROPOSED SITE**

Analysis Area: Kingman to Wilcox, Mohave County, Arizona

DATE: 9/13/00

ArcView File: F:\BIG SANDY-89\SOIL-SITE.APR

Produced By: JG

The water level in the Big Sandy Basin varies from surface flow and near surface in the southern portion of the basin near Wikieup to reported depths varying from less than 100 feet to more than 800 feet 36 to 40 miles north of Wikieup near the intersection of Highway I-40 and Highway 93 (Manera, 2000). These variations in the depth to water indicate that there may be both a shallow aquifer and a deep aquifer. The pattern of wells in the basin are shallow wells, in general, less than 300 feet in the southern portions of the basin with the wells increasing in depth as the distance from Wikieup increases.

The Project Area is underlain by several aquifers. The arkosic conglomerate, arkosic gravel, lower basin fill, upper basin fill and stream and flood plain alluvium are the principal units yielding water to wells. In addition to these units a confined basaltic aquifer exists at depth (volcanic rocks of Sycamore Creek), and is the proposed target aquifer for the water supply to the Big Sandy Energy Project. Most wells in the valley are set in either the alluvium or the upper basin fill (Davidson, 1973).

The alluvium is highly permeable and yields of up 1000 gallons per minute (gpm) of water to large diameter wells. Specific capacities of these wells are as high as 130 gpm per foot of drawdown. Aquifer tests in the alluvium near Wikieup indicate that the transmissivity of the alluvium is approximately 250,000 to 300,000 gallons per day per foot (gpd/ft) (Davidson, 1973).

Many of the wells in the alluvium also perforate the upper basin fill. The unit appears to be able to yield up to 1000 gpm of water to wells. Transmissivities of tested wells range from 100,000 to 150,000 gpd/ft (Davidson, 1973).

The gravel and sand beds in the lower basin fill appear to be of moderate permeability. Wells that obtain water from the lower basin fill yield from 1 to 18 gpm per foot of drawdown. In some areas the unit does not appear to provide sufficient water to wells (Davidson, 1973).

The arkosic gravel has wells that penetrate this unit in the northern portion of the valley. Specific capacities of these wells is up to 10 gpm per foot of drawdown. No wells penetrate this unit in the southern portion of the valley; however, the unit probably exists at depth (Davidson, 1973). Confirmation of these assumptions of the lithology are found in the drilling report by Lease.

The volcanic rocks of Sycamore Creek are a confined highly productive aquifer. Pump testing and exploration have been performed as part of a groundwater exploration program. The results of this program are detailed in the "Groundwater Resources of the Southern Big Sandy Valley" (Manera, 2000).

Groundwater quality in the valley is described by Davidson (1973) as having a total dissolved solids concentration of 350 to 800 mg/l with the concentrations increasing to the south. The maximum dissolved solids concentrations reported are 2540 mg/l. Water samples were obtained from the exploratory borings performed for the project. TDS concentrations for the volcanic aquifer ranged from 770 mg/l to 900 mg/l.

2.2.6 Land Use

The proposed Plant site is located about 45 miles southeast of Kingman, AZ and about four miles southeast of Wikieup, AZ in Mohave County. The Plant site will be located on private land owned by Caithness. Access to the Plant site from U.S. Highway 93 will be provided by a County access road. BLM-administered lands will be crossed at one section corner, and a right-of-way grant from the BLM will be required. Land ownership in the general Plant site area consists of a checkerboard pattern of private and federal lands.

The Plant site will be located on an undeveloped parcel of land owned by Caithness. The 120-acre site is currently zoned for Industrial Use. Portions of the lands surrounding the Plant site that are owned by Caithness will still be available for agricultural use or maintained in their natural state.

Future and planned land uses in the Plant site and vicinity are within the Rural Development Area (RDA) type defined in the Mohave County General Plan. Detailed land use classes in the RDA type include rural residential, rural industrial, public parks, public lands, and non-residential uses such as neighborhood commercial, commercial recreation, light industrial, heavy industrial, and airport industrial. The site and surrounding rural area is mostly undeveloped.

A BLM-designated right-of-way utility corridor identified in the *Kingman Resource Area Resource Management Plan (RMP) and Final Environmental Impact Statement* (BLM, 1993) crosses the southwestern portion of the Plant site. This mile-wide corridor is called the “Mead to Phoenix utility corridor.” Under the RMP, large utility facilities on federal lands are restricted to these corridors; their use minimizes surface disturbance to otherwise undisturbed areas.

Public utility and infrastructure facilities are necessary elements in the development of urban, suburban, and rural land uses. The proposed Project is compatible with the future land use planning areas of rural development. As can be seen from the description of rural development areas presented earlier, a wide variety of land uses are allowed in this type of area, including light industrial and heavy industrial. Therefore, construction and operation of an electrical power plant will be fully compatible with Mohave County land use planning.

2.3 Maps of Facility Layout

The current proposed design of the storm water system for the Project calls for all storm water runoff in the main plant area to be diverted to the two lined evaporation ponds for disposal by evaporation. All chemicals used at the plant are stored in this main plant area.

Storm water outside of the main plant will flow by gravity and natural drainage to evaporation ponds located west of the switchyard. Water collected in this area will be naturally evaporated. Other areas outside of the main plant area not drained into the evaporation ponds will be to natural drainage channels. A proposed layout of the facility is included on **Figure 2**.

Storm water channels, manholes, drainage pipes, and out-falls for the plant will be supplied to the ADEQ after completion of the design phase of the project. As built drawings of the storm water system will be supplied to the ADEQ, prior to start-up of the facility.

3.0 DESCRIPTION OF POTENTIAL SOURCES OF POLLUTION

A tentative listing of chemicals used at the Big Sandy Energy Project is provided in **Table 1**. If this list of chemicals changes, the ADEQ will be notified prior to plant startup. This table provides a list of the (Chemical Abstract Service) CAS number and maximum quantity of chemicals which may be used at the facility. The location of these chemicals will be supplied to the ADEQ prior to start-up of the facility. All of these chemicals are stored in the main plant area. The main plant area is covered with asphalt and concrete at buildings and road locations. The remaining areas in the main plant area are covered with rock. Storm water runoff in this main plant area is directed to the membrane lined evaporation ponds.

Preliminary information concerning the use of chemicals and types of control mechanisms for the location of these chemicals are provided in the following discussion. This information will be updated and the ADEQ notified prior to start-up of the Project.

3.1 Aqueous Ammonia

Aqueous ammonia (Location 1) is used at the facility in the selective catalytic reducer unit for the control of air emissions resulting from the combustion of natural gas. The concentration of anhydrous ammonia in the aqueous ammonia solution can vary from about 19 to 30 percent. Aqueous ammonia is used on a continuous basis at the facility.

The aqueous ammonia is stored in two 10,000 gallon tanks. These tanks are equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tanks are equipped with secondary containment. The piping from the tanks is doubled-walled at key exposed locations outside of containment areas.

The secondary containment system around this tank is approximately 4 feet high by 28 feet long by 15 feet wide. This area is capable of storing approximately 12,500 gallons or 125 percent of the maximum volume in one tank. The containment system is made of reinforced concrete to contain rainwater. The containment system will be equipped with a manually operated valve outside of the containment area which is kept in the closed position or manually pumped. Prior to removing liquids in the containment area, the liquid will be tested for the presence of ammonia. If the test is negative, the water will be removed from the secondary containment system.

TABLE 1
VARIOUS CHEMICALS USED AT FACILITY

Trade Name	Chemical Name*	CAS Number	Maximum Quantity On-Site	Location**
ACUTELY HAZARDOUS MATERIALS				
Aqueous Ammonia (19 to 30% solution)	Ammonium Hydroxide	1336-21-6	10,000 gallons	1
NALCO 356	Cyclohexylamine (20 to 40%) Morpholine (5 to 10%)	108-91-8	2,000 gallons	10
TRIACT 1800	Cyclohexylamine (10 to 20%)	108-91-8	2,000 gallons	8
Ammonia Refrigerant (R717)	Anhydrous Ammonia	7664-41-7	14,000 gallons	2
HAZARDOUS MATERIALS				
Sulfuric Acid	Sulfuric Acid (93%)	7664-93-0	6,000 gallons	4
Aluminum Sulfate	Aluminum Sulfate	10043-01-3	Variable	7
Bleach	Sodium Hypochlorite (10%)	7681-52-9	6,000 gallons	22
Sodium Hydroxide	Sodium Hydroxide (50%)	1310-73-2	6,000 gallons	3
Disodium Phosphate	Di-Sodium Phosphate	7558-79-4	500 pounds	5
Trisodium Phosphate	Tri-Sodium Phosphate	760-54-9	500 pounds	6
Ammonium Bifluoride	Ammonium Bifluoride	N/A	200 pounds	23
Sodium Carbonate	Sodium Carbonate	N/A	500 pounds	24
Hydrochloric Acid	Hydrochloric Acid (30%)	7647-01-0	10,000 gallons	25
Citric Acid	Hydroxy-propionic-tricarboxylic Acid	77-7279	500 gallons	26
STABREX ST70	Sodium Hydroxide (1 to 5% solution)	1310-73-9	2,000 gallons	9
NALCO 7280	Polyacrylic Acid (20 to 40% solution) Other Proprietary Chemicals	N/A	250 gallons	11
ELIMIN-OX	Carbohydrazide Amino Compounds	497-18-7	2,000 gallons	12

TABLE 1 VARIOUS CHEMICALS USED AT FACILITY				
Trade Name	Chemical Name*	CAS Number	Maximum Quantity On-Site	Location**
NALCO 7408	Sodium Bisulfite (40 to 70% solution)	7631-90-5	250 gallons	13
NALCO 22106	Sodium Polyacrylate Aryl Sulfonate	N/A	2,000 gallons	14
NALCO 7213	Tetrasodium ethylenedia- minetetraacetate (10 to 20% solution) Sodium Polyacrylate	64-02-8	2,000 gallons	21
Mineral Insulating Oil	Oil	N/A	25,000 to 40,000 gallons	20
Lubrication Oil	Oil	N/A	12,000 gallons	15
Hydraulic Oil	Oil	N/A	600 gallons	27
No. 2 Diesel	Oil	N/A	500 gallons	16
Various Cleaning Detergents	Various	N/A	100 gallons	17
Laboratory Reagents (Liquids and Solids)	Various	N/A	Small Quantities	18/19

* Provides the most toxic chemical used in the solution or formulation.

** The location of these chemicals will be provided prior to start-up of the plant.

3.2 Anhydrous Ammonia

Anhydrous ammonia (Location 2) is used in the facility as a refrigerant (R717) for inlet air chilling. The anhydrous ammonia is stored in a commercially manufactured refrigeration system. This refrigeration system can contain up to 14,000 gallons of anhydrous ammonia. Anhydrous ammonia is used continuously at the facility.

This commercial refrigeration system is equipped with a variety of internal controls and alarms for controlling accidental releases of anhydrous ammonia. The refrigeration system will be located in a building equipped to temporarily contain any ammonia gas releases. This building will be equipped with ammonia gas detectors and alarms to signal any accidental releases of ammonia gas from the refrigeration system.

3.3 Sodium Hydroxide

Sodium hydroxide (Location 3) is used as a demineralizer for resin regeneration and for pH control. Sodium hydroxide is injected into the water system by metering pumps. The concentration of the sodium hydroxide solution is approximately 50 percent. This chemical is used continuously at the facility.

The sodium hydroxide is stored in a lined 6,000 gallon tank. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of the containment area.

The secondary containment system around this tank is about 4 feet high by 16 feet long by 16 feet wide. This area is capable of storing approximately 7,500 gallons or 125 percent of the maximum volume of the tank. The containment system is made of reinforced concrete. This secondary containment system will contain any rainwater buildup. The containment area will be equipped with a manually operated valve located outside of the secondary containment area or the liquid contained in the area may be manually pumped. If a drain is used, the valve will be kept in the closed position. Prior to removal of liquids trapped in the secondary containment system, the basin will be tested with pH paper. If the test is negative, the water will be removed from the secondary system.

3.4 Sulfuric Acid

Sulfuric acid (Location 4) is used for control of scaling in the circulation water and for pH control in the cooling tower water system. The concentration of the sulfuric acid solution is about 93 percent. Sulfuric acid is injected into the water system by metering pumps. This acid is used continuously in the facility.

The sulfuric acid is stored in a lined 6,000 gallon tank. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. Additionally, the storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 4 feet high by-16 feet long by 16 feet wide. This area is capable of storing approximately 7,500 gallons or 125 percent of the maximum volume of the tank. The containment system is made of reinforced concrete and epoxy-lined. The secondary containment area will be equipped with either a drain to remove rainwater buildups or the area will be manually pumped. If a drain is used, a manually operated valve, in the closed position, will be located outside of the secondary containment area. Prior to removal of any liquids in the containment area, the basin will be tested for the presence of acid using litmus paper. If the test is negative, the water will be removed from the secondary system.

3.5 Disodium Phosphate

Disodium phosphate (Location 5) is used for boiler water scale control. A maximum of 500 pounds can be stored at the facility. This product is delivered to the facility in granular solid form. The disodium phosphate is mixed with water to form a slurry and then fed to the boiler water by metering pumps. Disodium phosphate is used continuously at the power plant.

The disodium phosphate is stored in bulk at the chemical storage facility area, until needed at the boiler. This chemical is stored with other similar chemicals that do not react with each other.

The disodium phosphate storage vessel at the boiler is surrounded by physical barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump is equipped with a manually operated drain valve, kept in the closed position, located outside of the barrier/sump system or the sump will be manually pumped. The liquid will be tested prior to removal.

3.6 Trisodium Phosphate

Trisodium phosphate (Location 6) is also used for boiler water scale control. A maximum of 500 pounds can be stored at the facility. This product is delivered to the facility in granular solid form. The trisodium phosphate is mixed with water in a tank to form a slurry. This tank is located near the boiler. Trisodium phosphate is used continuously at the power plant.

The trisodium phosphate is stored in bulk at the chemical storage facility area, until needed at the boiler. This chemical is stored with other similar chemicals that do not react with each other. At the boiler, the trisodium phosphate is mixed with water to the desired concentration and fed into the boiler water by metering pumps.

The trisodium phosphate storage vessel at the boiler is surrounded by physical barriers and sumps to control any accidental discharges of this product to the environment. This sump system will contain the maximum concentration of the volume in the storage vessel. The sump will be manually pumped or equipped with a manually operated drain valve located outside of the barrier/sump area. The liquid will be tested prior to removal.

3.7 Aluminum Sulfate

Aluminum sulfate (Location 7) is used as a water treatment chemical. Variable amounts of aluminum sulfate can be stored at the facility. This product is delivered to the facility in granular solid form. This product is mixed with water in a tank to form a slurry prior to injection into the water system. Aluminum sulfate is used continuously at the facility.

The aluminum sulfate is stored in bulk at the chemical storage facility area until needed. This chemical is stored with other similar chemicals that do not react with each other. When needed, aluminum sulfate granules are mixed with water to the desired concentration and fed into the water by metering pumps.

The aluminum sulfate storage vessel is surrounded by barriers and/or sumps to control any accidental discharges of this product to the environment. This secondary containment system will contain the maximum concentration of the mixing tank. A valve is located outside of the containment area to remove liquids or the liquids will be manually pumped from the secondary containment area. If a valve is used, it will be kept in the closed position. The contained liquid in the sump will be tested prior to manual pumping or discharging.

3.8 TRIACT 1800

TRIACT 1800 (Location 8) is used for corrosion control of condensate piping in the Heat Recovery Steam Generator. This product contains a 10 to 20 percent concentration of cyclohexylamine, an acutely hazardous material. Approximately 2,000 gallons of TRIACT 1800 is stored at the facility. This product is used continuously at the facility. NALCO 356 can be used as a substitute for TRIACT 1800.

The TRIACT 1800 is stored in a 2,000 gallon tank near the Heat Recovery Steam Generator. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. TRIACT 1800 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is about 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of TRIACT 1800 in the tank. The containment system is made of reinforced concrete with an epoxy-liner. This storage system is equipped with a drain to remove accumulated rainwater buildups in the secondary containment system, or the secondary containment area may be pumped. If a drain valve is used, it will be manually operated and located outside of the containment area. It will be kept in the closed position. Prior to draining, the liquid in the secondary containment basin is tested for the presence of cyclohexylamine. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.9 STABREX ST70

STABREX ST70 (Location 9) is used in the cooling water system as a biocide to prevent algae buildup in the cooling water pipes. This product contains sodium hydroxide in a concentration of 1 to 5 percent, and sodium hypobromite in a concentration ranging from 10 to 20 percent. Approximately 2,000 gallons of STABREX ST70 is stored at the facility. This product is used continuously at the facility.

The STABREX ST70 is stored in a 2,000 gallon tank near the cooling water system. This tank is equipped with continuous tank level monitors (e.g., high and low level), temperature and pressure monitors, alarms, check valves, and emergency block valves. STABREX ST70 is injected into the water system by metering pumps. The storage tank is equipped with secondary containment system. The piping from the tank is double-walled at key locations outside of containment areas.

The secondary containment system around this tank is approximately 3 feet high by 10 feet long by 11 feet wide. This area is capable of storing approximately 2,500 gallons or 125 percent of the maximum volume of STABREX ST70. The containment system is constructed of reinforced concrete. This secondary containment system will be manually pumped or equipped with a drain to remove rainwater buildups in the secondary containment system. If a drain is used, it will be equipped with a manually operated valve, located outside of the secondary containment system. This valve will be kept in the closed position. Prior to removal of an material in the secondary containment area, it will be tested for the presence of STABREX ST70. If the test is negative, the water will be removed from the secondary system to the water treatment system.

3.10 NALCO 356

NALCO 356 (Location 10) is used for corrosion control of condensate piping in the Heat Recovery Steam Generator. This product contains a 20 to 30 percent concentration of cyclohexylamine, an acutely hazardous material. Approximately 2,000 gallons of NALCO 356 is stored at the facility. This product is used continuously at the facility. TRIACT 1800 can be used as a substitute for NALCO 356.